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Air Operating Permit  
Excess Emissions Report  
Form Part II

Name of Facility	Shell, Puget Sound Refinery	Reported by	Tim Figgie
Date of notification	August 20, 2014	Incident type: breakdown/ upset/startup or shutdown	Upset
Start Date	August 20, 2014	Start Time:	2:00 PM
End Date	August 21, 2014	End Time:	6:00 AM
Process unit or system(s): SRU3			

Incident Description

On August 20, 2014 at about 1:50 AM the SRU3 stack SO<sub>2</sub> went high when the TGTU diverter valves tripped open to the incinerator due to a TGTU inline heater trip. This trip was caused by a surge of nitrogen flow that tripped open due to low AAG feed flow. Operations had been reducing AAG flow in preparation for a planned oxygen generation unit (a third party unit) outage. Efforts to restart the TGTU were unsuccessful so feed was removed from the SRU3 at approximately 4:23 am. The unit was successfully restarted at about 4:43 am and SRU 3 was placed in hot standby (no feed to the unit).

At approximately 12:30 PM the TGTU tripped due to a plugged demister pad on the booster blower system. The plugged demister pad was caused by a faulty H<sub>2</sub> analyzer and H<sub>2</sub> flow controller that allowed SO<sub>2</sub> breakthrough from the TGTU1 reactor to the quench column. Operations attempted to bypass the blower system but the TGTU1 inline heater tripped out, resulting in high SO<sub>2</sub> in the incinerator stack. At that time charge had been removed from the unit for more than 6 hours. The unit was restarted at about 8:00 PM and remained in hot standby.

The 12-hour 250 PPM SO<sub>2</sub> rolling average was exceeded on August 20 at 7AM, and from August 20 at 1PM to August 21 at 6AM.

Immediate steps taken to limit the duration and/or quantity of excess emissions:

Operations attempted restart of the TGTU as soon as possible and AAG feed was taken out of SRU3.

Applicable air operating permit term(s): 5.8.6

Estimated Excess Emissions: Based on online H <sub>2</sub> S CEMS and fuel gas flow meters	Pollutant(s): SO <sub>2</sub>	Pounds (Estimate): 21
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The incident was the result of the following (check all that apply):

- ☐ Scheduled equipment startup
- ☐ Scheduled equipment shutdown
- ☐ Poor or inadequate design
- ☐ Careless, poor, or inadequate operation
- ☐ Poor or inadequate maintenance
- ☒ A reasonably preventable condition

PSR0000641

Did the facility receive any complaints from the public?

☒ No  
☐ Yes (provide details below)

Did the incident result in the violation of an ambient air quality standard

☒ No  
☐ Yes (provide details below)

Root and other contributing causes of incident:

The root cause of this event was low AAG feed to SRU3.

The root cause of the incident was:

*(The retention of records of all required monitoring data and support information shall be kept for a period of five years from the date of the report as per the WAC regulation (173-401-615))*

☒ Identified for the first time  
☐ Identified as a recurrence (explain previous incident(s) below – provide dates)

Are the emissions from the incident exempted by the NSPS or NESHAP "malfunction" definitions below?

☒ No  
☐ Yes (describe below)

*Definition of NSPS "Malfunction": Any sudden, infrequent, and not reasonably preventable failure of air pollution control equipment, process equipment, or failure of a process to operate in a normal or usual manner. Failures that are caused in part by poor maintenance or careless operation are not malfunctions. 40 CFR 60.2*

*Definition of NESHAP "Malfunction": Any sudden, infrequent, and not reasonably preventable failure of air pollution control and monitoring equipment, process equipment, or a process to operate in a normal or usual manner which causes, or has the potential to cause, the emission limitations in an applicable standard to be exceeded. Failures that are caused in part by poor maintenance or careless operation are not malfunctions. 40 CFR 63.2*

Analyses of measures available to reduce likelihood of recurrence (evaluate possible design, operational, and maintenance changes; discuss alternatives, probable effectiveness, and cost; determine if an outside consultant should be retained to assist with analyses):

To prevent a reoccurrence of this event, shutdown/hot standby procedures will be reviewed and updated as needed. Also, the H2 analyzer and flow controller have been repaired.

Description of corrective action to be taken (include commencement and completion dates):

See above

If correction not required, explain basis for conclusion:

See above

*Attach Reports, Reference Documents, and Other Backup Material as Necessary. This report satisfies the requirements of both NWCAA regulation 340, 341, 342 and the WAC regulation (173-400-107).*

Is the investigation continuing? ☒ No ☐ Yes

Is the source requesting additional time for completion of the report? ☒ No ☐ Yes

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*Based upon information and belief formed after reasonable inquiry, I certify that the statements and information in this document and all referenced documents and attachments are true, accurate and complete.*

Prepared By: \_ Lisa Augustine/Tim Figgie

Date: \_\_\_ September 17, 2014

Responsible Official or Designee: \_\_\_\_\_



Date: 9/25/14